

## INTISARI

Ekstrak buah mengkudu memiliki kandungan flavonoid rutin dan kuersetin yang bermanfaat menurunkan kadar lipid darah, namun kelarutan dan absorpsinya terbatas. Untuk mengatasi masalah tersebut, ekstrak buah mengkudu diformulasikan menjadi SNEDDS (*Self Nano-Emulsifying Drug Delivery System*). SNEDDS dibuat menggunakan campuran asam oleat, Tween 20, dan propilen glikol.

Komposisi surfaktan dan ko-surfaktan ditentukan oleh persamaan *Simplex Lattice Design* (SLD) yang dianalisa dengan bantuan piranti lunak *Design Expert 7.1.5*. Desain percobaan diuji respon kejernihan dan waktu dispersi sebagai parameter optimasi. Formula optimum selanjutnya diverifikasi dengan piranti lunak *OpenStat 2012*, ditentukan konsentrasi maksimum ekstrak mengkudu yang dapat ditampung, diukur diameter dan distribusi ukuran tetesan dispersinya.

Formula optimum SNEDDS ekstrak mengkudu terdiri dari 12,50 %v/v asam oleat; 68,22 %v/v Tween 20; 31,78 %v/v propilen glikol, dan 75 mg ekstrak mengkudu tiap mL sistem. SNEDDS menghasilkan nanoemulsi jernih dengan transmitan  $96,67 \pm 0,21\%$ , waktu dispersi  $17,07 \pm 0,15$  detik dalam AGF, dan stabil selama masing-masing 3 dan 4 jam dalam AGF dan AIF. Emulsi SNEDDS ekstrak mengkudu memiliki tetesan berdiameter 63,20 nm dan distribusi ukuran tetesan yang seragam dengan nilai *polydispersity index* (PI) 0,314.

**Kata kunci:** SNEDDS, ekstrak mengkudu, asam oleat, Tween 20

## ABSTRACT

Noni fruit extract contains flavonoid rutin and quercetin which have the effect to lower serum lipid level, but they have limited solubility and absorption. To encounter the problems, noni fruit extract was formulated as SNEDDS (*Self Nano-Emulsifying Drug Delivery System*). SNEDDS was made from the mixture of oleic acid, Tween 20, and propylene glycol.

Surfactant and co-surfactant composition was determined by *Simplex Lattice Design* (SLD) and analysed with *Design Expert* 7.1.5. The experimental design was evaluated for its dispersion clarity and dispersion time as optimization parameters. The optimum formula was verified by *OpenStat* 2012, determined for its maximum noni fruit extract capacity, and diameter and size distribution of its dispersion.

The optimum formula of noni fruit extract consists of 12,50 %v/v oleic acid; 68,22 %v/v Tween 20; 31,78 %v/v propylene glycol, and 75 mg noni fruit extract each mL system. The optimum SNEDDS formula gave transparent dispersion with transmittance of  $96,67 \pm 0,21\%$ , dispersion time in AGF of  $17,07 \pm 0,15$  seconds, and stable for 3 hours in AGF and 4 hours in AIF. Dispersion of SNEDDS noni fruit extract had diameter of 63,20 nm and homogenous distribution with polydispersity index (PI) of 0,314.

**Keywords :** SNEDDS, noni extract, oleic acid, Tween 20